

**HOW TO MANAGE A COTTON CROP**  
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My title today is an almost impossible topic. There are many things that can be taught, i.e. I can teach soil fertility, I can teach insect control, I can teach weed control; however I am not sure anyone can teach management. Management is something which requires personal skills beyond raw intelligence. Management requires the ability to see things as they occur and to develop a feel for how what you do or may not do may interact with your crop and the environment to produce a desirable end result. That end result must ultimately be profitability of cotton on your farm sustained over time. I know of no one who wants to protect the environment more than a farmer. However, there is indeed some truth to the definition of sustainable agriculture offered by a grower friend of mine: staying in business. Staying in business is a complicated issue. It requires a tremendous knowledge and the ability to apply that knowledge in a timely manner. Of course a little luck never hurt anything either.

If you think about it, there is not a lot of difference in the production practices implemented by growers across the belt. Except for a little customizing, growers do about the same things. What sorts them out is when they do them. Timing is absolutely critical in application of cotton production technology. Just as the ability to properly time a response determines the success of a stand up comic, the ability to "be-on-time" determines the success or failure of a particular practice.

The cotton plant is perhaps the most complicated plant grown in large scale production in this country. Cotton is a deciduous perennial shrub, grown as an annual in an area outside its region of origin. To say the least, it is confused. Cotton's intermediate growth habit and sympodial fruiting branches cause it to develop a four-dimensional occupation of space and time which often defies analysis. The fact that cotton is developing vegetatively and reproductively at the same time places great demand on management to see to it that "proper" balance is maintained until the plant reaches cut-out. As the boll load develops it competes with vegetative growth for carbohydrates. If the boll setting process is delayed or disrupted, the available carbohydrates can be diverted to vegetative growth - and perhaps lead to more boll loading disruption. If the boll load over powers the plant too early in the season, for whatever reason, the plant may go into cut-out too soon reducing yield. Managing production inputs such as fertility, weed control, insect control, irrigation, etc., etc. to keep the plant in

balance is a difficult thing. Especially when the perhaps single largest factor remains beyond man's control - weather.

In the mid-south, we have found that an earliness management program helps us be better utilizers of our growing season. Earliness also helps us keep the plant in proper balance. Some advantages of earliness are increased yields, better fiber quality and producer grades, escapes late season pest and allows us a better chance of escaping adverse late season weather. Earliness also may have what some may say are disadvantages, I would call them demands. Among these are such things as a demand for increases in the level of management and the criticalness of timing. Some of the considerations for earliness are: selection of proper varieties; high quality seed; planting into a firm, moist, WARM seedbed; proper fungicides for the planting conditions; systemic at planting insecticides; proper herbicide and fertility programs and early season insect control. To achieve earliness does not necessarily mean early planting. Earliness is achieved by selecting early maturing varieties and allowing them to "do their thing". That means getting off to a good start by planting high quality seed into a WARM, moist, seedbed using proper fungicides, a sound systemic insecticide program, a herbicide program with crop safety in mind, a fertility program to provide proper pH, phosphate, potash and not excessive nitrogen. This is then followed with a sound early season insect control program as well as proper season long insect control. Proper insect control early season is critical.

Insect control is a topic which could consume this entire book, and there will be numerous papers concerning the topic within this proceedings. I feel that our focus must be not just on **IPM** (integrated pest management) but rather must be **ICM** (integrated crop management). We must all remember who we serve and work for - ultimately that is the cotton grower. The cotton growers do not plant cotton to manage insects or manage weeds or play games - he plants cotton to make a profit or stay in business. Management of the crop must be the ultimate goal. The cotton plant comes first - the other pieces of the puzzle are important but must fall in place around and supporting the cotton plant with profitable production as the goal. I think that is where everyone wants to go, but we must learn to zoom out to wide angle vision and manage the crop, not just micro-margin one area.

Researchers such as Dr. Johnnie Jenkins and others have shown that 70-75 percent of the total yield comes from first position fruit. First position sites arise in the terminal of the plant. Second position and beyond arise after the branch elongates from the terminal. We also know that on early season varieties 25 percent of the crop is made below node eight and 80-85 percent made below node 14. Workers in the 1950's reported that 90-93 percent of the crop was set within the first four weeks of flowering.

Recent workers report that square shed during the first three weeks of squaring is primarily due to insects with only 5-7 percent of the square shed during the first four weeks of squaring be from a physiological or other nature. As flowering begins and the boll load begins to develop fruit loss from physiological shed may increase due to some factor inducing carbohydrate stress on the plant. That is not a problem early season.

What does all this mean - the squares set during the first four weeks gives rise to the blooms which open during the first four weeks of flowering - this produces 90-93 percent of the crop. First position fruit account for 70-75 percent of the yield and are initiated in the terminal. 80-85 percent of the yield on early season varieties will be set below node 14. In some work Dr. Jenkins, Dr. Jack McCarty and I did, we found that in a well managed growers field every fruiting site which placed a boll in the picker was initiated on the plant within 60 days after planting. It means that the fruit load is and/or can be developed on the plant very quickly. Early season management is absolutely critical in an earliness program. On the other hand - when I refer to earliness I mean, for us in the mid-south, to make our cotton crop fit our growing season. For us that means about 125-135 days, i.e. planting and seedling establishment in late April early May, set squares in June, set flowers in July, mature the crop in August, defoliate around September 5-10, pick from September 20-October 30. If we loose early season fruit, we shift the season to the right - increase risk of late season insect pest, weather damage and just running out of heat to mature bolls. If the crop makes a shift to late season, it should be a reason beyond our control. If we give up the early crop by management decisions, we then become dependent on late season weather by intent. If our crop in the mid-south is pushed into a late season situation, it should be for some reason beyond our control, not by intent.

For us to remain competitive and profitable in cotton production, we must continue to learn as much as possible about the growth, development and fruiting characteristics of cotton varieties. Upon doing so, we must then implement management programs to allow the crop to perform in the environment where it is being produced. To do this requires us to be integrated CROP managers with the ultimate goal of grower profitability.